Surface Flux Studies

Final Report for Naval Research Laboratory N00173-09-1-G004 - Surface Flux Studies

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Results

I have analyzed observational data from BANGEX (Bangex5, 2008) experiments in terms of atmospheric surface flux including processing of gradient and fast turbulence probes. I wrote both processing code and graphical user interface to Bangex5 NPS and NRL flux and "tower" data (which allows to clean and merge the data) and looked at issues related to crossover time, solar contamination of temperature measurements, influence of meteorology on IR temperatures. I wrote an interface in "perl" and used "hash" (associative arrays) to combine the data set on "time key". For graphics I used "Ocean Data View" to develop observational evidence for diurnal variability of temperature of dissimilar objects in the surface layer for use in thermal contrast estimates. I performed analysis of the meteorological data including estimates of vertical and temporal gradients of temperature and fluxes. I served as consultant for Capt. David Bieger of Naval Postgraduate School who used my analysis for thermal IR images analysis (MPS M. Sc. thesis). Besides Capt. David Bieger. I collaborated with NPS and NRL researchers Peter Guest and Andreas Goroch. I derived time series QC and TOB3/EdiRE-type flux corrections and provided gradient flux estimates and derivation of T^* and z_0 and integration of fast flux observations from NPS and NRL towers and integration of this data with slow gradient measurements. BANGEX (Bangex5, 2008) was a series of tests to provide increased understanding of the variability in thermal response of objects on or under the ground responding

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Flatau analyzed observational data from BANGEX (BangexS, 2008) experiments in terms of atmospheric surface flux including processing of gradient and fast turbulence probes.

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to changes of near surface meteorological conditions. Flux data analysis was corrected for known problems (lag, spectral response, WPL, planar fit), comparison of NRL/NPS flux measurements.

References

BANGEX 5 Preliminary Report Peter S. Guest, Andreas K. Goroch, David G. Bieger, Richard J. Lind, Kenneth L. Davidson, 15 September 2008, NPS-MR-08-002

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Principal Investigators: Dr. Piotr Flatau

Enclosed is the final technical report with an SF298 for the above referenced grant.

Sincerely,

Mrs. April Fink
Contract and Grant Administrator

Enclosures

cc: SIO Contracts and Grants, M/C 0210